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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,431	08/26/2003	Hitoshi Okanobori	100347-00002	1716

4372 7590 01/10/2007  
ARENT FOX PLLC  
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WASHINGTON, DC 20036

EXAMINER
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HAILEY, PATRICIA L

ART UNIT	PAPER NUMBER
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1755

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/10/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/647,431

Applicant(s)

OKANOBORI ET AL.

Examiner

Patricia L. Hailey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on October 16, 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6 and 7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6 and 7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Applicants' remarks and amendments, filed on October 16, 2006, have been carefully considered. Claim 5 has been canceled; no new claims have been added.

Claims 1-4, 6, and 7 remain pending in this application.

Support for the amendments to claims 1 and 4 can be found in the Specification at page 8, lines 5-7.

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Document was filed on August 23, 2003.

### ***Withdrawn Objections and Rejections***

The objection to claim 7 for being in improper dependent form for failing to further limit the subject matter of a previous claim, stated in the previous Office Action, has been withdrawn in view of Applicants' amendment thereto.

The 112(2) rejection of claim 4 stated in the previous Office Action has been withdrawn in view of Applicants' amendment thereto.

The 102(b) rejection of claims 1, 2, 6, and 7 as being anticipated by Japanese Patent No. 62-079289 stated in the previous Office Action has been withdrawn in view of Applicants' amendments and persuasive arguments traversing this rejection.

The 102(e) rejection of claims 1 and 4-7 as being anticipated by Zhou et al. (U. S. Patent No. 6,746,597) stated in the previous Office Action has been withdrawn in view of Applicants' amendments and persuasive arguments traversing this rejection.

The 102(e) rejection of claims 1 and 5-7 as being anticipated by Romanenko et al. (U. S. Patent No. 6,753,290) stated in the previous Office Action has been withdrawn in view of Applicants' amendments and persuasive arguments traversing this rejection.

### ***New Grounds of Rejection***

The following New Grounds of Rejection are being made in view of Applicants' amendments, and in view of the Examiner's reconsideration of the cited references of record.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 102***

3. ***Claims 1-4, 6, and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Baker et al. (U. S. Patent No. 6,485,858).***

Baker et al. disclose graphite nanofiber catalyst systems comprising one or more noble metals, alloys or bimetallics thereof, on a graphite nanofiber having a surface area from about 0.2 to 3000 m<sup>2</sup>/g (considered to read upon **claim 4**). The nanofiber is comprised of graphite sheets that are substantially parallel or perpendicular to the longitudinal axis of the nanofiber, and has at least 95% of the sheets' exposed surfaces

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comprised of edge regions. See col. 2, lines 29-52 of Baker et al., which also discloses platinum as an exemplary noble metal (col. 2, lines 35-37; considered to read upon **claim 6**).

The nanofiber is further characterized as having interstices of about 0.335 to about 0.67 nm (which reads upon Applicants' "cavities having an average diameter of 0.5 to 5 nm"), a crystallinity ranging from 50 to 100% (considered to read upon the limitation "mesophase" in **claim 2**) and widths ranging from about 0.75 nm to about 1000 nm (which corresponds to Applicants' "carrier having an average particle size of 0.01 to 10  $\mu\text{m}$ "). See col. 3, lines 16-35 of Baker et al (considered to read upon **claim 3**).

The graphite nanofiber catalyst system, because of its affinity towards hydrogen, can be used to dehydrogenate organic compounds. See col. 7, lines 25-35 of Baker et al. (considered to read upon **claim 7**).

In view of these teachings, Baker et al. anticipate claims 1-4, 6, and 7.

### ***Response to Arguments***

In response to Applicants' argument that Baker et al. do not teach all of the elements of the claimed invention, it is the Examiner's position that the nanofibers disclosed in this reference read upon the limitations "carbon nanotubes" and "carbon nanofibers" recited in Applicants' claim 3. Further, the dimensions of the nanofibers disclosed in Baker et al. correspond to Applicants' "cavities" by teaching that the nanofibers have interstices of about 0.335 to about 0.67 nm (which reads upon

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Applicants' "cavities having an average diameter of 0.5 to 5 nm"), and also correspond to Applicants' "carrier having an average particle size of 0.01 to 10  $\mu\text{m}$ " by teaching that the nanofibers have widths ranging from about 0.75 nm to about 1000 nm. Further, crystallinity of the nanofibers as disclosed by Baker et al. (e.g., 100%) is considered to read upon the limitation "mesophase" in Applicants' claim 2

For these reasons, Applicants' arguments with respect to Baker et al. are not persuasive.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Patricia L. Hailey/plh  
Examiner, Art Unit 1755  
January 8, 2007

  
T.J. LORENZO  
SUPERVISORY PATENT EXAMINER